

**c.) Remarks**

In the office action of April 25, 2005, claims 1, 5, 6, 12, 14, 15, 27 and 28 have been rejected. Applicant has amended claims 1, 5, 6, and 27, and cancelled claims 12 and 28 without prejudice. Claim 28 has been cancelled to place the application in condition for allowance and/or to reduce issues for appeal. Claim 12 has been canceled, and the subject matter of claim 12 has been added to base claims 1 and 27. Claims 1 and 27 have been further amended as have claims 5 and 6 to correct grammatical preferences. As such, the amendments to claims 1, 5, 6, and 27 do not add new matter and do not raise new issues that would require an additional search or further consideration. Entry of these amendments and reconsideration of the claims is respectfully requested.

Further, claims 2-4, 7-11, 13, and 16-17 have been withdrawn from consideration by the Examiner. Applicant has cancelled the withdrawn claims 2-4, 7-11, 13, and 16-17 without prejudice to place the application in condition for allowance. Such cancellation of claims is not an admission of non-patentability. Applicant has simply cancelled those claims to place the application in condition for allowance, preserving the right to pursue the cancelled claims in a further continuation or divisional application.

Still further, Applicant has added new claims 28-39 to more clearly recite implicit aspects of the invention. Such new claims do not add new matter, and are fully supported throughout the specification. See, e.g., page 8, ll. 6-7; page 14, ll. 17-20; and page 19, ll. 12-19. Allowance of new claims 28-39 is respectfully requested.

Applicant believes the application is in condition for allowance. Please reconsider the application for reasons set forth below.

Outstanding Rejections/Objections

The Examiner has entered or maintained the following objections/rejections:

1. Claims 1 and 27-28 are rejected under 35 USC § 112, first paragraph. Applicant has cancelled claim 28 without prejudice for reasons discussed above. Regarding base claims 1 and 27, Applicant has amended those claims as shown above, obviating the rejection. Such amendments to claims 1 and 27 do not add new matter and do not raise new issues that would require an additional search or further consideration. Accordingly, entry of those amendments and withdrawal of the rejection is respectfully requested.
2. Claim 27 is rejected under 35 USC § 112, second paragraph. Applicant has amended claim 27 as mentioned above. Such amendment also obviates this rejection. Withdrawal of the rejection is respectfully requested.
3. Claim 28 is rejected under 35 USC § 102(b) as being anticipated by U.S. Patent 4,505,758 to Carson ("Carson '758"). Applicant has cancelled claim 28 without prejudice for reasons discussed above. Accordingly, withdrawal of the rejection is respectfully requested.
4. Claims 1, 5-6, 12, and 27 are rejected under 35 USC § 103(a), as being unpatentable over Carson '758 in view of U.S. Patent 3,933,606 to Harms ("Harms '606"). Applicant has

cancelled claim 12 and added the subject matter of claim 12 to base claims 1 and 27. As such, those amendments do not add new matter and do not necessitate a new search or further consideration since claim 12 has already been search and considered by the Examiner.

Claim 12 recited “applying a constant electric charge.” According to Webster’s New World Dictionary, the word “constant” means going on all the time; continual; persistent. As such, the Applicant’s specification more than “reasonably conveys” to one of ordinary skill in the art that the electric charge can be continuous (*i.e.* non-intermittent). In addition to the teaching of original claim 12, the specification also explicitly states at page 8, ll. 6-7, “The electric charge is typically a constant electric charge.” The specification further explicitly states at page 13, ll. 9-10, that “it is immaterial whether the voltage is constant or modulated in some way.” Further, at page 19, ll. 12-19, the specification reads as follows:

As we have discussed, in any design, the application of a repulsive charge on the tubes is useful. These are the critical surfaces at which heat transfer occurs. The flow of the hot CSO contacts the shell-side surface of the tubes in a manner described as cross-flow (FIG. 7). This flow pattern (71) creates a vortex (72) behind the tube (73) which promotes good heat transfer. Over time, fouling develops on the surface of these tubes causing heat transfer efficiency to decline. As this proceeds, the fouling will increase to a point where the equipment must be taken off-line and cleaned. Applying the electric charge to tube wall (74) of the heat exchanger will prevent or significantly reduce the frequency of maintenance.

(emphasis added). Clearly, at least this disclosure of the specification “reasonably conveys” that since fouling develops over time and during the process, the application of the charge can be on, continual, or constant during the process run to “prevent or significantly reduce the frequency of maintenance” due to accumulated fouling. Terms like “prevent” imply a continual time interval opposed to terms like “remove” and “clean” that imply intermittent usages after the fact, as proven by the disclosure of Carson.

Still further, the process descriptions presented at page 14, ll. 17-20 and at page 17 more than “reasonably conveys” the idea that the voltage and resulting charge can be applied throughout the entire “run”, *i.e.* the entire time the hydrocarbon stream flows in contact with the object in which the voltage/charge is applied. There, the specification again refers to the prevention of fouling during the entire process run.

Considering the combination of Carson and Harms in more detail, that combination does not teach, show, or suggest applying a constant (*i.e.* “continual” or “non-intermittent”) electric charge, as recited in base claims 1 and 27 as amended as well as those dependent therefrom. Carson discloses a process for heating selected portions of a cooler for short periods of time, *i.e.* intermittent time intervals, to melt paraffins that have solidified within the cooler. In other words, Carson is a removal or cleaning process, not a preventative process.

The method of Carson operates by applying a large enough voltage so as to result in resistive heating of selected portions of the cooler after high molecular weight petroleum components have solidified and accumulated on the cooler internals. This heat melts the high molecular weight petroleum components that have solidified within the cooler and therefore, removes the solidified components from the cooler. In other words, that application of voltage does not prevent or reduce the solids from forming, but removes the solids after forming.

In fact, Carson teaches away from a constant (*i.e.* “continual” or “non-intermittent”) application of electrical charge. Carson ‘758 uses short, intermittent applications of voltage to remove or clean the accumulated, solidified paraffins within a cooler because any longer duration of such resistive heating would defeat the purpose of the cooler. Therefore, the application of the heat has to be sporadic and intermittent. Otherwise, the cooler of Carson would not be satisfactory for its intended purpose which is cooling a process stream.

The Examiner is kindly reminded that the teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, not in the applicants' disclosure. See M.P.E.P. § 2143, citing *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). Furthermore, the proposed modification cannot render the prior art unsatisfactory for its intended purpose. *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984). As discussed above, any longer duration of electric charge to the cooler of Carson would impart too much heat and would render the cooler unsatisfactory for its intended purpose which is cooling a process stream.

The references of record, including Harms, do not add to the above deficiencies of Carson. Therefore, a combination of Carson and Harms does not teach, show, or suggest applying a constant electric charge, as recited in base claims 1 and 27 as amended as well as those dependent therefrom. For at least this reason, withdrawal of the rejection and allowance of the claims is respectfully requested.

5. Claims 14-15 are rejected under 35 USC § 103(a) as being unpatentable over Carson '758 in view of Harms '606, and further in view of U.S. Patent 6,451,210 to Sivavec et al ("Sivavec '210"). The argument above regarding claim 1 equally applies to claims 14-15 since claims 14-15 each include the limitations of claim 1. Accordingly, claims 14-15 are also in condition for allowance for the reasons discussed above. Withdrawal of the rejection and allowance of the claims is respectfully requested.

**d.) Conclusions**

Because the Examiner's rejections have been properly addressed, Applicant respectfully requests withdrawal of the outstanding rejections, and allowance of the application. Applicant believes that no fees are due or associated with the filing of this document.

This is intended to be a complete response. If any issues remain outstanding, please contact the undersigned for resolution of the same.

Respectfully submitted,

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